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ORIGINAL ARTICLES.

MUCOUS PATCH OF THE CONJUNCTIVA.

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A barber, of German parentage, referred by Dr. Nolte and seen with Dr. H. V. Würdemann, came complaining of a "small tumor," as he expressed it, on the palpebral conjunctiva of the lower lid of the left eye. Particles of dust, to which he attributed the cause of his trouble, had been a source of irritation to the eye six days previous. A syphilitic history, the initial lesion dating back eighteen months, was acknowledged. "Mixed" treatment was still being continued, the skin was smooth and fair, and he appeared to be in a good physical condition. There was a mucous patch on the right buccal membrane, scars of old ones on the opposite side and on the back of the pharynx. On examining the eye, on the conjunctiva of the left lower lid, a circumscribed spot, not vascular, slightly elevated, and of a peculiar greyish color about four mm. in length and two mm. wide was seen two mm. from the edge of the lid and a little to the outer side of median line.

The parts were thoroughly cleansed with 1-4000 bichloride

solution and lotio nigra painted on. The patient was given same with instructions to apply it himself. At the following visit, two days later, the ulcer had spread to the contiguous surface of the ocular conjunctiva forming somewhat of a triangular patch, the rounded apex extending nearly to the limbus of the cornea with a healthy bridge of conjunctiva be-

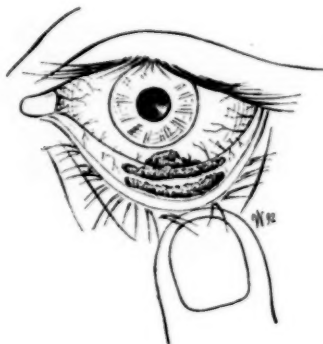


FIG. 1.

tween it and the original patch. [See Fig. 1.] The patient was directed to continue with the lotio nigra several times a day. At the expiration of a week scarcely a trace of the patch appeared. An interval of three weeks elapsed before his next appearance, during which the ulcer had entirely healed with the formation of symblepharon between the ocular and palpebral conjunctiva.

ANNUAL REPORT OF THE PRESBYTERIAN
EYE, EAR AND THROAT CHARITY HOS-
PITAL OF BALTIMORE CITY, 1891.

BY JULIAN J. CHISOLM, M.D., SURGEON IN CHIEF.

The hospital work for the year presents sufficient items of interest to warrant comment. The number of cases treated was 10,003, of which 7,364 were eye patients, 1,458 suffered with ear affections and 1,181 were throat patients. There were 1,127 cases among negroes, which fairly represent the proportion of colored to the white population of Baltimore City.

Of the eye cases the first tabulated were lid affections, always numerous, this year numbering 1280. There were 18 cases of *lid cancer* and 181 of *tarsal tumor*, a larger percentage than in preceding years. One item of curious interest was 13 cases of *pediculi of the lashes*. In the preceding 13 years of hospital work only 12 cases in all had been recorded. The marked influx of this rare disease is explained by the admission of numbers of Russian and Polish Jews to the Dispensary. They were recent arrivals in this country and had not dwelled long enough to have their home habits disturbed. The louse from the head, as is well known, is never seen on the eye lashes, nor does the body louse locate itself on these hairs. It is the crab louse of the pubis that is found attached to these cilia. One of these cases of phtheiriasis was in a negro child, and a second case was in a well dressed white native, a boy, æt. 12, and of apparently cleanly habits. The insects were destroyed by rubbing the edges of the lids with yellow oxide of mercury ointment.

Among the affections of eye muscles there were 264 cases of *strabismus*. This hospital has done good work in removing these ugly deformities from the street of Baltimore City. At one time pedestrians would constantly encounter cross eyed people. Now they are not often met with. 1369 cases of squint have been operated upon in this institution.

In the list of conjunctival affections there were 48 cases of *purulent ophthalmia* of the newly born. When infants are brought to the hospital early enough, with the cornea still clear, no eye has ever been lost from this destructive disease. Unfortunately we see too many with corneas already perforated under the home treatment, whatever that may have been. The hospital course of treatment is the daily instillation of a drop of a 1% solution of nitrate of silver, and the persistent use at home of a borax solution (grs. x to 3j), the eyes being kept clean by the hourly use of these drops. The nitrate of silver solution is used as long as the pus secretion continues, viz. once a day at the hospital. This necessitates a daily visit for inspection for from 10 to 20 days. The earlier the caustic solution is used the more prompt the control of the suppurations and a stronger solution of the silver nitrate than 5 grains to the ounce of distilled water is never used, and the one drop never applied more frequently than once in 24 hours.

There were 16 cases of *vernal conjunctivitis*. This very tedious disease yielded promptly to free cauterization of the thickened conjunctival rim, around the corneal border, by means of the galvano-cautery. The same remedy was found efficacious in cases of episcleritis. In some cases the red thick lumps under the conjunctiva, which had resisted all other remedies, disappeared promptly under the free cauterization.

Of *cataract cases* 570 sought treatment at the hospital during the year 1891; 188 of these were operated upon. There were 132 extractions, 88 without iridectomy and 44 with iridectomy. Under the aseptic precaution of plunging all instruments in boiling water, both before and after using them, there has not been a single case of corneal sloughing after cataract operation this year. Cataract extraction has now become the ideal

operation in surgery. In the hands of skillful surgeons good results are nearly always obtained. In all cases of simple senile cataract I omit the section of the iris in the extraction; 6 cases of senile cataract were ripened by needling. They were sufficiently advanced to interfere with useful vision, and yet with no promise of maturing for many months. These were in old persons who had not the time to await the slow processes of nature. In from one to two weeks after opening the capsule all transparent lens substance had become opaque. The lens was then extracted without iridectomy and with excellent results. In one of these cases a persistent diarrhœa from the day after the operation necessitated frequent daily visits of the patient to the water closet, yet $V = \frac{20}{xx}$ was obtained. The tendency is to perform cataract extractions without awaiting the complete maturing of the lens. In extracting senile cataracts I remove the anterior capsule with forceps. It is an improvement over the cystotome. It does away to a great extent the necessity for a second operation for capsular films, and gives more immediate good vision.

Operations on the eyeball show 50 enucleations, 3 eviscerations and 8 optico-ciliary neurotomies. I find much benefit from this last operative procedure in the preservation of comparatively good looking eyes made painless by nerve section. In this hospital 82 neurotomies have been performed. In only 3 cases as far as known to me was it necessary to enucleate because of returning pain in the eyeball. I have had no trouble in the operation, and no bad consequences from it. The eviscerations were in cases of panophthalmitis with much swelling of eyeball and eyelids. Recovery by evisceration is not so prompt as after enucleations. To many surgeons it seems a safer practice to leave the socket tissues undisturbed, when the eyeball is full of pus, and yet in my own experience I have never seen trouble from enucleating eyes during the height of suppuration.

Although chloroform is the general anæsthetic administered at this hospital for all tedious, painful operations the *bromide of ethyl* has been in constant use since 1881 for all

painful operations of short duration. A drachm of this liquid in an air-tight cone held over the mouth and nose of a patient will ensure complete anesthesia in less than one minute. No one can resist its narcotic influence. It has been administered at the hospital thousands of times in the past ten years and always with satisfaction. It is a powerful remedy to be used with caution. With the watchful care that is practiced in its administration it has been found always efficient and always safe. My assistants have become familiar with the mode of administration. I use a thick towel folded in cone form, with a piece of thick paper between one of the layers of towel to keep out the air and to shut in the anæsthetic. The hollow of the cone makes a sufficiently commodious air chamber. The base of the cone, a soft towel, can adopt itself as an air tight joint upon the face. It is necessary to make the atmosphere breathed a saturated ethylized air, then anæsthesia comes after a very few inhalations. If the air be admitted freely from without no narcotism takes place.

A CASE OF DERMOID CYST OF THE ORBIT.

BY JOHN DUNN, M.D., RICHMOND, VA.

Miss A., æt. 16, was brought to me to have removed a small, firm tumor situated at the inner angle of the eye, apparently just above the lachrymal sac. The skin was movable over the tumor, which itself seemed also slightly movable. The father of the young lady said that he had first noticed the swelling when Miss A. was about three years old; that it had remained at one size for many years, but that of late it had begun to increase rather rapidly; that for the past two months whenever Miss A. *had a bad cold the tumor would swell and become almost purple on its surface.* Miss A. said that it had never given her pain, but that its variations in size were marked; that some days it was scarcely noticeable, while others it produced a considerable swelling at the corner of the eye. The ball was healthy, nor was there present any obstruction to the flow of the tears, nor had the patient complained of any. The temporary swellings of the tumor when the patient had a cold made me wrongly suspect that it was in some way connected with the lachrymal sac. I accordingly passed a small knife along the upper canaliculus into the sac and thence into the tumor. About half a teaspoonful of an oleomargarine colored, semi-granular, fatty substance came out. My mistake in diagnosis was then evident. For a week no discharge came from the cyst, either into the nose or externally. About two weeks after the cyst had been opened it began to increase in size and to discharge through the lachrymal sac. As the patient lived in a distant city, directions were given her physician in regard to washing the sac out with an antiseptic fluid. Con-

siderable œdema of the lids followed this treatment, and when I next saw Miss A. an abscess had formed at the seat of the sac, the opening into the lachrymal sac having fortunately, as it turned out, closed. The abscess was opened through an incision in the skin, emptied, and several times washed out with nitrate of silver solution. In a short while the discharge from the sac ceased, the outer wound healed, and I had hopes the sac wall has been sufficiently destroyed to the inflammation to disappear in time.

One year later Miss A. came again to see me. The tumor was growing rapidly she said; it had begun to reappear slowly shortly after I had seen her; it was now beginning to be painful. It was now about the size of a hazel-nut, and filled the whole angle between the nose and frontal bone. The skin over it was so stretched that several small blood vessels could plainly be seen in it. The skin, however, at this point was not adherent to the tumor. Accordingly a 4% cocaine solution was injected over the surface of the tumor, and on making an incision through the skin the tumor was found to have a distinct sac which was not adherent anywhere to the skin externally, so that it could be readily separated from it. With the aid of cocaine I was enabled to dissect out the tumor entirely. Its sac was a tough, fibrous one; at first it was white, but as the dissection went on it became a reddish blue. Posteriorly, and especially inferiorly, the adhesions between the sac and the surrounding tissues were tough and many. Some of these adhesions were probably due to the inflammation set up at the time of its opening. The only objection I found to the use of cocaine in this case was the time it took, since the bleeding, which was a little annoying, washed away the solution before its effects could be obtained. In the dissection the sac became ruptured below at the point of the former puncture. The escape from it was, however, slight. The contents of the tumor were granular and rather whitish than yellow in color. The hole left by the removal of the tumor was washed with a 1-1500 bichloride and then dusted with iodo. The wound was then closed with several sutures, and although the hole

left by the removal of the sac was from 10 to 12 mm. in diameter, no drainage tube was inserted. A piece of adhesive plaster was put over the wound. The parts healed without supuration so that at the end of about three weeks there was only a fine linear scar to mark the place from which the tumor was removed.

Within the past year, so far as I can find out, two cases of dermoid of the orbit have been reported. One by Pooley in the *Ophthalmic Record*, for December, 1891; the other by Vigues in the *Recueil d'Ophthalmologie* for July, 1891. In both cases the first attempt failed to remove the tumor so as to prevent its return. Pooley attempts to remove his through the cul-de-sac. The sac of tumor is ruptured and there is an end of the attempt. As in my case, where, through a mistake in diagnosis, the sac was simply opened, the removal of the tumor seemed for the first few days to have been accomplished by merely puncturing the sac. Then there is a reaccumulation of the sac contents, inflammation with swelling of the lids. Later on a "more radical operation" is undertaken. No cyst walls can be found. Daily washing with hydrogen peroxide until the wound heals from the bottom. Pooley reports this case cured at the end of a month. Possibly the cure was less complete than it seemed at the end of the month. The apparent absence of any definite sac wall is to be commented on. Vigues finds a firm, whitish, smooth sac, without adherence to the surrounding parts. This continues in a pedicle along the nasal wall. He removes all but the pedicles. The tumor returns and necessitates a second operation. In my case the sac wall is firm, even tough, and, though many adhesions exist between it and the surrounding tissues, with care it can be entirely dissected out. The sac is whitish in appearance, but soon becomes reddish-blue showing its large vascular supply. Some of the adhesions were undoubtedly due to the inflammation that followed its puncture; the others probably due to the displacement pressure exerted during the growth of the tumor. The use of cocaine in these cases is to be advised where the patient is old enough to lend his assistance. After

the skin is cut it is well to apply the cocaine directly to the cut surface by means of cotton soaked in it. This cotton may be left in contact with the parts for a little while. In my case the fluctuation in size of the tumor is to be commented upon, and the explanation it seems, must be sought in some temporary obstruction to the escape of the venous supply from the sac, which in them might owe its cause to increase in the contents of the sac causing change in the relative position of the parts of the tumor, producing thus pressure over veins where none existed before, the swelling disappearing as soon as the collateral veins assume the increased demand upon them.

In view of the length of time that the tumor had existed in Pooley's case it is worthy of comment that there was no sac wall of sufficient thickness to be discoverable. It is in the highest degree probable that some changes go on in the contents as well as the size of these cysts, and that certain parts of the cyst contents must be more or less constantly undergoing absorption, and these changes would seem to be inseparable from changes in the condition of the wall of the sac. The history of the dermoid cysts would be interesting, especially as to how far their increase in size is due to growth of the sac, and how far to increase of the sac contents. Vignes, quoting Panas, says that these intra-orbital dermoid cysts, when their contents are serous, are the result of the imprisoning in the orbit of a part of the foetal nasal mucous membrane. When their contents are oily, containing epithelial cells, hairs, etc., they result from an "*invagination ectodermique dans la fente fronto-maxillaire.*" My case was probably of the latter origin. Pooley ends his article with "I believe that the removal of such a tumor in its sac is practically impossible and that the proper operative course is to keep the orbit drained by a tube, and to inject its cavity until healing takes place from the bottom; nor does it seem an easy matter to accomplish this by operating through the conjunctival cul-de-sac." My case teaches an entirely different lesson, viz., that the proper treatment of encysted tumors of the orbit where we have reason to suspect their dermoid nature is to make, preferably under cocaine

anæsthesia, an incision through the skin over the tumor down to the sac which can then be dissected out in its entirety. No drainage tube is necessary, where proper antiseptic precautions have obtained; and it is best to sew the wound made in the skin together. The hole fills with blood which clots and in time disappears leaving the hole filled in. Where no sac wall can be found, Pooley's suggestion may be followed.

SELECTIONS.

OPTIC NEURITIS AS A FORM OF PERIPHERAL NEURITIS.¹

BY ALVIN A. HUBBELL, M.D., BUFFALO, N. Y.,

Professor of Ophthalmology and Otology in the Medical Department of Niagara University.

Peripheral neuritis, both clinically and pathologically, has assumed a recognized position in medicine to-day.

The attention of physicians in the past has frequently been directed to manifold sensory, motor and trophic affections, but until recently the conjectured lesion has been located in the spinal cord or brain, or the disease has been regarded as merely functional. It was in 1866 that Dumenil² first established by autopsy and microscopical examination the existence of extensive disease in the peripheral nerves as the cause of such manifestations, although Graves, of Dublin, had, nearly twenty years before, expressed his belief that the spinal cord or brain was not the seat of such lesions. Ten years after Dumenil made the first demonstration, Eichhorst³ recorded a case in which a post-mortem examination showed the spinal cord to be perfectly sound, but several peripheral nerves presented evidences, both grossly and microscopically, of interstitial inflammation. Then followed Joffroy⁴ in 1879, Leyden⁵

¹Read before the New York Medical Association at its eighth annual meeting.

²Gazette hebdom. de méd. et de chirurg., 1866.

³Virchow's Archiv., lxi, 1876.

⁴Arch. de phys. norm. et path., 1879.

⁵Zeitschr. f. klin. Med., 1880.

in 1880, and Grainger Stewart⁶ in 1881, with similar reports. During the past decade the pathological study of peripheral nerves has been pursued with commendable zeal, and upon inflammation of them or its results are now known to depend many forms of paralysis, especially localized ones, numerous sensory disturbances, and various trophic changes in the skin, bones, muscles and other tissues whose description in detail I must withhold from this paper.

Investigators have also shown that such inflammations and degenerations follow upon certain diseases or certain agencies with a frequency that justifies the regarding of the latter as ætiological factors in the production of the former. Among those which thus act as causes may be mentioned diphtheria, scarlet fever, measles, small pox, typhoid and malarial fevers, la grippe, syphilis, tuberculosis, leprosy, diabetes, rheumatism, locomotor ataxy, beri-beri, etc., and such substances as lead, arsenic, alcohol, bisulphide of carbon, etc. There is also idiopathic peripheral neuritis whose cause is not apparent, which expresses itself in such diseases as herpes zoster, Raynaud's disease, circumscribed scleroderma (Hutchinson), sciatica, so-called rheumatic paralysis, such as that of the facial, abducens, etc. Again it may occur from traumatism and pressure. The relation which peripheral neuritis is thus shown to hold to other diseases, both as an effect and as a cause, gives it a far-reaching importance to the diagnostician, therapist, and pathologist.

I desire at this time not only to emphasize this importance, but to indicate also that this disease is not confined to the nerves of motion and general sensation, as is generally understood by the profession, but includes inflammations of nerves of special sense as well, having the same known general causes, as well as arising idiopathically or from unknown causes, and the symptoms of which correspond in character and magnitude with the functions involved. I might with propriety consider inflammations of the olfactory and gustatory

⁶Edinburgh Medical Journal, 1881.

nerves, and point out how they may be the sequence of influences not started or found in their end-organs or in the brain, but arising from the same causes as inflammations of other nerves. It is only thus that many affections of smell and taste can be accounted for. So also with the nerve of hearing. Certain forms of deafness, tinnitus and vertigo are undoubtedly induced by typhus and typhoid fevers, measles, scarlet fever, small-pox, mumps and syphilis, through a peripheral neuritis of the auditory nerve. I will, however, limit this part of my discussion to inflammations of the optic nerve.

The pathology and pathological anatomy underlying many forms of visual disturbances are subjects of comparatively recent study. Before the discovery of the ophthalmoscope the fundus of the eye was clinically an impenetrable region. With this instrument the practitioner has been enabled to reach and study it, and by post-mortem examination has verified the diagnosis of such forms of neuritis as express themselves at the intra-ocular extremity of the optic nerve—the optic disc—by swelling, cloudiness, and change of color. But there are some cases which present the subjective symptoms and clinical history of optic neuritis, but the ophthalmoscope does not show the disc-picture formerly believed to be a necessary accompaniment. As early, however, as 1866, von Graefe⁷ of Berlin, whose clear insight and acuteness of observation have never been excelled, suspected that such subjective symptoms were not due to amaurosis (amaurosis was then, as now, a cloak-word for pathological ignorance) or to brain disease, but rather to inflammation of the optic nerve situated behind the ball and showing very little change within the eye, and, therefore, out of sight of the ophthalmoscopist. He described cases in which vision became clouded and within a few hours or days absolute blindness ensued, and yet the ophthalmoscopic signs were almost negative. Both eyes were symmetrically affected, and the blindness was temporary in some and permanent in others. To this form of disease, acute in character, he gave the name retro-bulbar or retro-ocular optic

⁷Arch. f. Ophthalm., xii, 1866, p. 114.

neuritis. The diagnosis of the lesion was afterward verified by post-mortem examinations. Later, Leber,⁸ in 1869, expressed the belief that the symptoms in certain cases of amblyopia with central scotoma, but without any marked changes in the fundus of the eye, were due to a form of chronic inflammation in the orbital portion of the optic nerve. These conjectures were subsequently entertained by other investigators; but it was not till Samelsohn,⁹ of Cologne, in 1880, and Nettleship and Edmunds,¹⁰ of London, in 1881, made the initial post-mortem examinations of cases of central amblyopia that demonstration was actually made of an inflammatory and resulting degenerative process in the course of the optic nerve. In each of these cases there was found "a tract of chronic interstitial inflammation and degeneration extending from the optic foramen, where it was central, to the eyeball, where it occupied the outer part of the optic nerve".¹¹ Similar results were obtained by Vossius,¹² of Königsberg, 1882; Bunge,¹³ of Halle, 1884; Uthoff,¹⁴ of Berlin, who made seven autopsies, 1884 to 1886; and Sachs,¹⁵ of Innsbruck, 1887.

Thus, it has been conclusively proved that optic neuritis may exist both with and without objective ophthalmoscopic signs and with varying subjective symptoms from mild to aggravated, and in its progress it may be rapid or slow. These symptoms, objective and subjective, I need not detail here. They are clearly before the profession.

⁸Archiv f. Ophthal., xv, 1869, p. 65.

⁹Ctrblt. f. d. med. Wissensch., Berlin, xviii, 1880, p. 418; also, Archiv f. Ophthal., xxviii, 1882, p. 1.

¹⁰Trans. of the Cphthal. Soc. of the United Kingdom, i, 1881, p. 124.

¹¹Nettleship. Trans. of the Ophthal. Soc. of the United Kingdom, i, 1881, p. 128.

¹²Archiv. f. Ophthal., xxviii, 1882, p. 201.

¹³Ueber Gesichtsfeld, etc. (Field of Vision and Course of the Fibers in the Optical Conducting Apparatus), Halle, 1884.

¹⁴Ctrbl. f. prakt. Augenheilk., 1884, p. 43; and Archiv f. Ophthal., xxxii, 1888, p. 95, and xxxiii, 1887, p. 257.

¹⁵Archiv. f. Augenheilk., xviii, 1887, p. 21 (translated in Knapp's Archives of Ophthalmology, 1889, p. 133).

In diagnosis, however, proper exclusions should be made in cases where impairment of vision can not be readily accounted for by the ophthalmoscope or other means of examination. Thus, there are various lesions within the encephalon that affect vision without involving the optic nerve—for example, disease of the occipital lobe of the brain. Quinine produces in sufficient doses such disturbance of the circulation of blood in the optic nerve by vaso-motor irritation as to greatly contract the field and diminish the acuteness of vision, either temporarily or permanently. Experimental research by De Schweinitz,¹⁶ of Philadelphia, made during the present year on animals goes to show that it does not produce neuritis. Atrophy of the optic nerve may undoubtedly take place without a preceding neuritis by some mechanical or vaso-motor arrest or diminution of blood supply to the nerve.

As causes of optic-nerve inflammation there are many that are common to this and other forms of neuritis. Thus, it may be caused by injury, and injury will produce neuritis elsewhere. Contiguous inflammations, such as orbital cellulitis or meningitis, may cause it. So may other nerves become involved in the inflammatory processes of surrounding tissues. Pressure from growths or foreign bodies causes inflammation of both the optic and other nerves.

It is well proved and generally admitted that certain substances and poisons produce an inflammation of certain peripheral nerves (peripheral neuritis), prominent among which are alcohol, lead, arsenic and bisulphide of carbon. These substances, too, produce some form of optic neuritis. To fortify this statement I will cite some authorities. Uhthoff,¹⁷ of Berlin, has clearly shown that alcohol develops axial or chronic retrobulbar optic neuritis. Hutchinson,¹⁸ of London, and Allbutt,¹⁹ of Leeds, are among several who have reported cases

¹⁶Ophthalmic Review, London, x, 1891, p. 49.

¹⁷Archiv. f. Ophthal., xxxii, 1886, p. 95, and xxxiii, 1887, p. 257.

¹⁸Royal London Oph. Hospital Reports, Part I, vol. vii, 1871, p. 6.

¹⁹Use of the Ophthalmoscope, London, 1871, p. 265. See, more recently, Oliver, Gulstonian Lectures on Lead Poisoning. Brit. Med. Jour., March 21, 1891, p. 633.

of optic neuritis and subsequent optic-nerve atrophy, as shown by the ophthalmoscope, caused by lead in the system. Among those who have seen optic neuritis in chronic arsenic poisoning are DaCosta,²⁰ of Philadelphia and C. L. Dana,²¹ of New York; Nettleship,²² of London, Fuchs,²³ of Liège, Galezowski,²⁴ of Paris have seen "axial" optic neuritis (central amplyopia) in persons exposed to the fumes of bisulphide of carbon in the manufacture of certain rubber materials.

Diseases which cause peripheral neuritis also cause optic neuritis. Hulke,²⁵ of London, as early as 1868, recorded cases of optic neuritis after diphtheria, and Allbutt²⁶ and others have made similar observations. Wadsworth,²⁷ of Boston, and others have seen optic neuritis after measles. Macnamara,²⁸ of London has reported cases in which optic neuritis developed in rheumatism and intermittent fever. He has also seen this disease in la grippe,²⁹ and so also have Weeks,³⁰ of New York, and others. The history of the recent epidemics of la grippe furnishes many examples of "peripheral palsies." Typhoid and typhus fevers, small pox, scarlet fever, syphilis, tabes, tuberculosis and diabetes stand out more or less prominently in their ætiological relations to peripheral neuritis. Optic neuritis also is found in each of them in corresponding frequency. Lastly, both peripheral and optic neuritis occur alike idiopathically without any assignable cause.

I might multiply illustrations showing the common origin of both so-called peripheral neuritis and optic neuritis in some

²⁰Medical Times, Philadelphia, March, 1881.

²¹Brain, London, ix, 1886, p. 546.

²²Trans. of the Oph. Soc. of the Un. Kingdom, v, 1885, p. 149.

²³Ibid., p. 152.

²⁴Rec. d'ophtal, 1887, p. 30.

²⁵Royal London Ophthal. Hosp. Rep., vi, p. 108.

²⁶Use of the Ophthalmoscope, 1871.

²⁷Trans. of the Am. Ophthal. Soc., 1880, p. 125.

²⁸British Med. Journal, March 8, and May 3, 1890, pp. 540 and 100.

²⁹Ibid., Aug. 1, 1891, p. 251.

³⁰New York Medical Journal, Aug. 8, 1891, p. 143.

of their varieties, but it seems to me that the evidence already adduced is sufficient to place beyond doubt the claim that certain ætiological influences and pathological results are common to both, the symptoms varying only in correspondence to difference of function of the nerve or nerves affected.

We cannot, perhaps, understand why alcohol, bisulphide of carbon, tobacco or diabetes should induce axial or chronic retro-bulbar neuritis, while lead, arsenic, diphtheria, tabes, la grippe, or measles should develop a neuritis more generally interstitial, often acute and showing ophthalmic signs. Neither can we offer satisfactory explanation why lead pre-eminently affects the nerves supplying the extensor muscles of the extremities and the muscles of the intestine, or why tobacco has a special affinity for the nerves going to the heart, or why diphtheria conspicuously leaves its impress upon the cranial motor nerves and some of the spinal. Yet, such facts remain, and the lesson which they teach us to-day is that inflammation may attack all classes of peripheral nerves alike, those of special sense as well as those of general sensation and motion, that the cause is wide-spread and common, and that the principles of treatment are identical.

Peripheral neuritis in its broadest sense, therefore, becomes of intense interest and far-reaching importance to both the general practitioner and specialist.

ORTHOPTIC TRAINING.¹

BY C. M. CULVER, M.D.

In an article which I read before this Society, in February, 1887, it was predicted that, within the next decade thereafter, the efficiency of our armamentarium, with which to combat convergence anomalies, would be more than doubled.² It was prior to that time that orthoptic training assumed its place among our means for use in that class of cases, but it has since come to be understood as standing very high in its class, in efficiency. It is not as often applicable as is Dyerization, which is a similar training of all the ocular muscles which preside over vision of near objects, but is closely akin to that method of treatment. Indeed, Dyerization is a conjunction of orthoptic training with systematic training of the ciliary muscles. It is assigning orthoptic training a high rank, as regards utility, to place it as a part of Dyerization, which Mr. R. Brudenell Carter,³ of St. George's Hospital, London, praises most highly and which Dr. Lippincott declared, at the last session of the American Ophthalmological Society, to be among the foremost of modern discoveries, in ophthalmology. Its great helpfulness to my patients has taught me to esteem it very highly.

The translation of the Greek word is, "straight," or "right," in the sense in which these words are used in speaking of a straight or right line; the muscles, which undergo orthoptic training, have to do with directing the lines of vision of a pair

¹Read before the Albany County Medical Society, January 13, 1892.

²Albany Medical Annals, May, 1887, p. 151.

³Carter. Eyesight, Good and Bad, page 149.

of eyes, hence this sense might seem applicable in this case. But those lines of vision are straight, however directed, and the muscles trained, orthoptically, control only the observance of, or divergence from, parallelism, of those lines. But the prefix, in the word "orthoptic" has the meaning it has in "orthodoxy," that is, "correct." Although it is primarily essential that the practicing ophthalmologist, when dealing with the average case of abnormality of the directing muscles of the eyes, take fully into count the modifying influence of co-existing accommodation, the phrase, "orthoptic training," has been limited, in its application, to the extrinsic muscles of the eyes. Hence, although Dyerization is the systematic training which enables eyes that were formerly, muscularly impotent relatively, to accomplish an average amount of near work, "correctly," the accepted application of orthoptic training, is not directly to any other than the extrinsic, or directing, muscles of the eyes.

Many authors have spoken of gymnastic training of the extrinsic muscles, by means of prisms. It is an essential of binocular vision that the images, for the two eyes of a pair, be formed upon corresponding parts of their retinae. When such images are formed on heterologous parts of the retinae, diplopia results. Hence, as those endowed with binocular vision instinctively avoid diplopia, the extrinsic muscles, whenever that is possible, bring the eyes of a pair into such relative positions that the images of the object fixed are formed upon homologous parts of their retinae. A prism deflects a ray of light, from the course it has pursued, in a direction toward the base of the prism. Accordingly, if a prism be made to deflect the rays from any object so that, for one eye of a pair, they impinge on a part of its retina, which does not correspond to the part upon which the image in the fellow eye is formed, diplopia results. When the extrinsic muscles can so move the eyes as to make the parts of the retinae, upon which the images are formed, correspond, binocular, single vision ensues. It is in this way that prisms are used for the training of the extrinsic muscles, by causing those muscles to act. Dr.

Noyes,⁴ in his work, has called this "gymnastic" training, and commended it. While it has been somewhat discussed with reference to its applicability to the extrinsic muscles which cause vertical movements of the eye-balls, that use of the method does not appear to me of practical utility and, so far as my own experience is concerned, I am not aware of a case in which it has done any good, nor do I recall a case in which I have attempted to make use of it. That it is possible to produce a certain degree of increase in power, of such a muscle, by its systematic exercise, by such means, is conceded, but its practicality is questionable, since, if the degree is slight, a permanent prism may more readily do the same work, and if the degree be great nothing is properly in order but operative procedure. Of course prisms compose, theoretically, by the combination of an infinite number of them, any lens that can be mentioned, and they enter, practically, into ophthalmological practice, as in von Graefe's vertical-diplopia test, in the double prism of the Javal-Schiøtz Ophthalmometer, and in Maddox's double-prism. I value prisms, therapeutically, when worn, much more than I formerly did; having been led, by Dr. Noyes' suggestions, to use them more, in practice, and by the experience in practice, to esteem them more highly. But while I am disposed to hold, generally, the just position held by Dr. Noyes, of neither praising them without stint nor utterly condemning them, I think prisms have been too much relied upon, by ophthalmologists, both as means of diagnosis and as therapeutic agents. Several ophthalmologists have lately, publicly expressed a similar opinion.⁵ I have just cited the forms of them, suggested by von Graefe and Maddox, used as aids to diagnosis, but, even here, Manddox's stirring-rod test, for which the apparatus, necessary, can be bought for the 1-4800th of the price of the von Graefe test that I customarily use, is adequate, in the average case. I use,

⁴Noyes. *Diseases of the Eye*, 1890, page 190.

⁵Vide Risley; *A New Apparatus* etc. *The Medical and Surgical Reporter*, fifth December, 1891. Vide Myles Standish, *Amer. Jour. of Oph.*, November, 1891, page 372.

several methods, in such tests, but the stirring-rod is the one on which most dependence is placed. In the training, or exercise of the lateral recti muscles prisms are of more use than elsewhere, especially when it is the recti *externi* that we seek to influence. In all near work, the *interni* of a pair of average eyes are brought into use, in answer to a volition. But the *externi* cannot be voluntarily made to act, hence the use of weak abducting prisms. The normal power of a pair of recti *externi* amounts to that used in overcoming abducting prisms aggregating 3.50 minimum deviation degrees, to do which the eyes recede from each other about one metre-angle. While adducting prisms may be used, for the exercise of the internal recti, that is a very primitive method, and one which has sunk into comparative disuse. I recall a case, wherein this method was used, with satisfaction to all parties. But it required daily visits of the patient, at my office for a month. Since that time I have procured, in similar cases, as good results, with much less work for the patient. The average person has nothing to do with prisms, except, as a child, to be amused a few hours with a mutilated one, which formerly helped to adorn a chandelier. Hence, when it is a question of using the internal recti, which an average pair of eyes always uses, when near work is being done, it seems like a wild chase round Robin Hood's barn, to resort to prisms, when the binocular fixation of any near object will accomplish the same action of the internal recti. Since prisms are so seldom dealt with by the average person, it is true that, in many cases, the amount of power represented by the amount of prism-deflection that a pair of internal recti can overcome, is often much less than the power actually at the disposal of these muscles. In such cases the lack is not of force, but of knack. I recall a case, which I saw about eight years ago, in which the patient seemed to have utterly immobile eyes, so far as adduction was concerned. She called on me, daily, four times. The three first days showed no improvement. The third day's call was almost exclusively devoted to attempting to show the patient what was wanted of the eyes. The last time she came, she

announced, on entering the consultation room, that she had been able to make the eyes do what I required of them. And it was true and the defect had entirely disappeared. The patient had not acquired any power, which enabled her to annihilate the defect, but had merely learned the knack of combatting the action of adducting prisms. In another case, the patient appeared to have no adductive power in the morning, that being at a time when I used prisms, mainly for the test of such function. In the afternoon of the same day, I gave the patient prisms aggregating more than half the amount that can be overcome by a normal pair of eyes. Presently he said to me, as I sat several meters distant from him: "I see you single, at times, but not at all distinctly, at those times." Of course, in order to converge to any considerable extent, the concomitant function of accommodation needed to be used, simultaneously, and equally of course, that rendered any object, ten feet distant, blurred to the eyes that were viewing it. Mr. F. had acquired at least fifteen times the ability, to converge, that he had acquired the *knack* of using prisms. In neither of these cases was the seeming lack of converging power, in the beginning, due to a want of intelligence, for the girl seemed bright and Mr. F. is one of the most intelligent men of my acquaintance. Hence we may expect to meet with similar cases of response of the *interni* to the influence of prisms, among those composing the average *clientèle*.

In discussing this matter, Dr. Oliver⁶ has written about adducting prisms: "The ability to overcome prisms equal to fifty degrees implies, in most cases, an ability indefinitely exceeding this and many who, at first trial, can accomplish only one-half of this, will after two or three attempts, on different days, succeed in uniting images with the full strength of the adducting prisms." As a fixation-object, when it is desired to practice the systematic use of the *interni*, Landolt's ophthalmodynamometer is the best we have, it being the nearest practical realization of the luminous line, or point. I have

⁶Ann. of the Universal Medical Sciences, 1889, vol. iv, page 13-14.

used various forms of it, but have last adopted that which is used with an ordinary candle. When last in London, I got a point, from Mr. R. Brudenell Carter, which I have found useful. He suggested to me the putting of the red glass, in a pair designed for use in orthoptic training or as a part of the apparatus employed in Snellen's test, with red and green letters, always on the right side, because the letter "R" is the initial of both red and right. It is only of mnemonic utility, but I have used it to much advantage. In a pair of spectacles, used in orthoptic training of the *interni*, one glass is made red, in order that the image, received by that eye, may be reddened, and, consequently, more readily distinguished, as a separate image, if there be real diplopia. The other ellipse of the frame may be empty, since the object is solely to obtain images with some evident difference between them. For use, in this connection, I devised a black card, bearing a white line, this being in order that the object, which the line constitutes, may be susceptible of coloration, like the luminous line obtained when using Landolt's dynamometer. It is not my purpose to cite case-histories in connection with this paper. It would be possible, however, to cite many cases in which this simple card apparatus has sufficed to obtain satisfactory results, when it has been used in connection with orthoptic training. The longer arm is of such length that when it is free and is placed against the bridge of the average nose, the other arm, bearing the white line, will be eleven millimeters from the person's eyes. Hence, when the free end of the longer arm is against the nose bridge, and the object line, on the shorter arm, at right angles to its lower one, is seen binocularly and single, nine meter-angles of convergence (the minimum-normal) are being performed by the eyes in question. The use of such a fixation-object as a finger, which has been too commonly employed, in tests or training of the internal *recti* muscles, suggests what Dr. Randall said, in a paper before the American Ophthalmological Society, in '89, that "No eye, with a self-respecting accommodation, could focus for such a point." It is desirable too, that the fixation-object be white,

on a black ground, in order that its coloration may be feasible. When the Red-Right hint of Mr. Carter's is used, and a patient resides at a distance, if he writes that the red line is to the left, the surgeon knows at once that the convergence does not suffice. If too much convergence were employed, for the distance of the object, the red line would be at the left.

Landolt's stereoscope is specially serviceable in the training of the lateral *recti* muscles. The ordinary stereoscope lenses are each the combination of a bi-convex lens, of six dioptries, with an adducting prism of six minimum-deviation degrees. Landolt's stereoscope is of the dimensions of the ordinary one, and generally like it, except that there are no prisms used in it, and each of the simple convex lenses, of six dioptries, is movable, horizontally, about forty millimeters. By the possible decentration of the lenses, a great deal of prismatic effect is obtainable, in either sense, hence the potential control of the amount of task imposed upon the eyes concerned. This apparatus has been specially useful to me in cases wherein I have already operated for the correction of strabismus. While I am content with the final results of my squint-operations, I must be permitted to be a skeptic as to anybody's ability to do accurately what an English reviewer has blamed me for calling "dose" these operations. "Landolt insists upon the importance of combining an orthoptic treatment with an operation for strabismus. His views on this question are to be found in a concise form, in the official report made by him to the International Congress for Ophthalmology, at Heidelberg."⁷

Orthoptic training is often the most primary observance of physiology, in connection with the extrinsic, ocular muscles. In many cases, too, it constitutes the ounce of prevention that is worth a ton of cure, in the cases where it is applicable as a preventive.

⁷Ann. of the Univ. Med. Sci., 1889, vol. 4, page B-48; vide Landolt, Rapport, sur la Question du Strabisme, présenté au VIIe Congrès International d'Ophthalmologie à Heidelberg, page 11.

THE ACTION OF TUBERCULIN UPON THE EXPERIMENTAL EYE TUBERCULOSIS OF THE RABBIT.

Report from the Institute for Infectious Diseases in Berlin.

BY PROF. W. DOENITZ.

Contrary to the negative results of Baumgarten, the author said, in his report before the Society of Charité Physicians, that he is now in a position to demonstrate healed tubercular processes accomplished with tuberculin, and which have been heretofore considered as impossible. The author then demonstrated, in the eyes of a number of rabbits, tubercular processes established by inoculation, both with pure cultures and with tubercular tissues, in various stages, from that of the first irritative reaction, occurring about the middle of the third week, to that of the complete cure, the latter resulting in from three to four months, the eye retaining its function as a visual organ.

In the early part of the treatment with tuberculin, the tubercular process is hastened, cloudiness of the cornea and pannus developing rapidly, whereas in the eye of the control animal, the process is slower, with, however, early necrotic processes at the seat of the puncture and rapid perforation, this necrosis not occurring when tuberculin in gradually increasing doses was administered. It is immaterial whether the treatment is begun immediately after inoculation, or at a time when true tubercle had been formed. The administration of the product obtained by Klebs from Koch's tuberculin

was attended with only temporary improvement; the eyes were eventually lost. The same dose of the unmodified tuberculin, and continued without increase, also failed to produce good results.

The conclusions are:

1. The tuberculin is a sure curative agent for the experimental tuberculosis of the eye of the rabbit.

2. The tuberculin shows its curative effect only after true tubercle can be demonstrated.

1. The first effect of the tuberculin is a transient but severe irritation of the eye.

4. Under the continuous action of the tuberculin, all irritation in the eye subsides.

5. When, before beginning of the treatment, deep-reaching destructive processes have not occurred, the cure results in retention of the visual functions of the eye, otherwise, atrophy results.

6. To a cure it is necessary that the tuberculin be given in increasing doses, and the continued maintenance of a not too slight reaction is essential.—*Deutsche Medicinische Wochenschrift*, November 19, 1891.

SOCIETY PROCEEDINGS.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

THURSDAY, DECEMBER 10, 1891.

HENRY POWER, F.R.C.S., President, in the Chair.

ORBITAL HÆMORRHAGES IN YOUNG CHILDREN.

Mr. Holmes Spicer read a paper, describing several cases recently under observation. The patients are generally hand-fed infants from six to eighteen months of age, who have been brought up on "infant foods." The orbital hæmorrhage occurs spontaneously beneath the periosteum, and shows either as a line of blood-staining at the orbital margin, or as a large effusion giving rise to displacement of the eye and distension of the upper lid. Sub-periosteal extravasations also occur in other parts of the body, generally during an attack of infantile scurvy or "scurvy-rickets."

The form which the orbital hæmorrhage assumes is due to the anatomical arrangement of the periosteum and other structures. The hæmorrhage subsides rapidly at first, but does not disappear entirely, and the eye is left prominent for many months. The treatment is essentially that of scurvy; in addition to the ordinary food, juice of fresh meat, a little fruit or vegetable, cod-liver oil or cream should be given. The slighter cases recover rapidly, the more serious ones are slow in progress and often fatal.

IMPLANTATION CYST OF THE CORNEA.

Mr. Treacher Collins showed an eyeball removed from a boy, *æt.* 12, one year and nine months after a perforating wound of the lower part of the cornea by a stick. Situated partly in the cornea and partly in the sclerotic, at the seat of injury was a large cyst measuring 9.5 millimetres laterally and 5 millimetres antero-posteriorly. This was found microscopically to be lined by laminated epithelium, the most flattened cells being towards the interior of the cyst. Since no epithelium exists normally in the parenchyma of the cornea, Mr. Collins thought that this cyst had resulted from the implantation of a portion of the surface epithelium into the substance of the cornea, and that this epithelium had subsequently grown and proliferated, some of the cells undergoing mucoid degeneration, thus forming the fluid contents of the cyst.

HEREDITARY OPTIC ATROPHY.

Mr. Johnson Taylor (Norwich) read notes of four cases of this affection occurring in one family. The history as to heredity was scanty, the maternal grandmother being the only relation whose sight was known to have been defective; she became blind or nearly so when *æt.* 40. The cases described included four male children in a family of eleven, namely, the first, second, fifth, and eighth, the remaining children, five females and two males, being unaffected. In the first case sight failed rapidly but unequally in the two eyes at the age of 27. In the second case failure began at the age of 21, and progressed quickly until vision was reduced to less than 20 J. with the right eye and 18 J. with the left. In the third case the defect was discovered at the age of 18, and at that time one eye alone was defective. In the fourth case sight was found to be bad when the child was only *æt.* 6. For about a year he seems to have been nearly blind, but since then vision has improved, so that with the left eye he can read some words of 1 J.; the right eye sees 20 J. badly. In all the cases there was

marked central amblyopia, with color defect more evident in the central part of the field, and in addition there was some loss of the periphery of the field. The ophthalmoscopic appearances in each case were those of optic nerve atrophy, with slight haziness of the discs and some obscuration of the lamina cribrosa. As is so generally the case, there was a complete absence of symptoms of disease of brain or spinal cord. The three older patients were smokers, but, with the exception of the first, could not be said to smoke excessively. There was no family history of nerve disease.

Dr. Habershon said that he had been much interested in Mr. Taylor's report of his cases. He had some years previously read a paper upon this subject before the Society, in which he had given notes of a number of cases which he had diagnosed as belonging to that form of optic nerve atrophy first described by Leber. He noticed that in Mr. Taylor's cases there was peripheral contraction of the fields of vision in addition to central scotoma. In the original paper Leber laid stress upon the presence of central defects without any contraction of the fields. He had expressed the opinion in his previous communication to the Society that there were probably two or three factors to be considered in the causation of this disease. In many cases it seemed likely that one of these factors was tobacco.

CARD SPECIMENS.

Mr. Juler: (1) Symmetrical Orbital Tumors; (2) Persistent Retinal Hæmorrhages in a Case of Diabetes; (3) Unusual Growth in the Vitreous.—Mr. Johnson Taylor: Intraocular Growth of Doubtful Nature.—Mr. F. R. Cross: (1) Essential Shrinking ("Pemphigus") of the Conjunctiva; (2) Opaque Nerve Fibres Covering the Optic Disc.—Mr. Tatham Thompson: Case of Leber's Hereditary Optic Atrophy.

REVIEW.

A HANDBOOK OF THE DISEASES OF THE EYE AND THEIR TREATMENT. By Henry A. Swanzy, A.M., M.B., F.R.C.S.I. 3rd edition. Philadelphia, P. Blakiston, Son & Co., 1890.

Swanzy's book is one of the best recent text-books on eye diseases. The short time in which a third edition was reached shows plainly its well deserved popularity. Type and illustrations are of the best.

THE REFRACTION OF THE EYE. A manual for students; by Gustavus Hartridge, F.R.C.S., with ninety-eight illustrations and test-types. Fifth edition. Philadelphia, P. Blakiston, Son & Co., 1891.

The fifth edition of this excellent manual, which we have heartily recommended to our confrères at former occasions, is considerably enlarged. We can only repeat the recommendations of former years.

3000 QUESTIONS ON MEDICAL SUBJECTS ARRANGED FOR SELF-EXAMINATION. Philadelphia, P. Blakiston, Son & Co., 1891.

This is a little volume intended to help the student in preparing for correct answers to the examiner. Personally, we are not fond of encouraging parrot-like learning; yet there may be good coming from the little volume, in spite of our opinion.

TEXT-BOOK OF OPHTHALMOSCOPY. By Edward G. Loring, M.D. Edited by Francis B. L. Loring, M.D. Part II. DISEASES OF THE RETINA, OPTIC NERVE AND CHOROID; THEIR VARIETIES AND COMPLICATIONS. New York, D. Appleton & Co., 1891.

Whosoever was in possession of the first and admirable volume of this life work of Dr. E. G. Loring, who was so suddenly called from this existence, awaited anxiously the appearance of this, the second volume. It is a great pity that Dr. E. G. Loring could not have finished this volume, and yet, unfinished as it is, it is full of original work and thought, and, in our opinion, Dr. F. B. Loring deserves praise for having given us his brother's work without any addition. It is certainly an admirable work of an original American worker, and as such should not be wanting in any oculist's library.

ANNUAL OF THE UNIVERSAL MEDICAL SCIENCES. A yearly report of the progress of the general sanitary sciences throughout the world. Edited by Charles E. Sajous, M.D., Vol. II., Philadelphia, F. A. Davis, 1891.

This comprehensive work gives a complete synopsis of a year's progress in medical science, and it is, therefore, of great value as a book of reference. The report on ophthalmology is by Ch. A. Oliver.

ALT.

Every one of these books may be obtained from Messrs. J. H. Chambers & Co., 914 Locust street, St. Louis, Mo.